23rd National Award for Excellence in Energy Management 2022

Techno Campus Office (TCO) – Chennai

August 2022

Contents

cognizant

Cognizant Overview

Cognizant (Nasdaq-100: CTSH) is one of the world's leading professional services companies that engineers modern businesses. We help our clients modernize technology, reimagine processes and transform experiences so they can stay ahead in our fast-changing world. Together, we're improving everyday life.

318,400
Employees worldwide

$18.5B
Total revenue

194
Fortune 500
May 2022

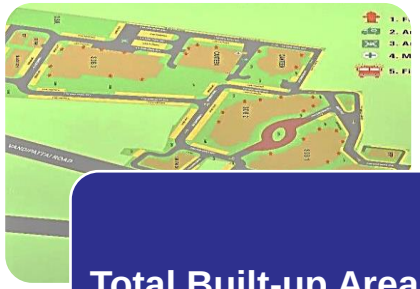
350
Forbes World's Best Employers for Diversity
April 2021

113
Fortune's World's Most Admired Companies
Feb 2022

567
Forbes Global 2000
May 2022

327
Forbes 2021 World's Best Employer list
Oct 2021

Facility Overview



Total Built-up Area
560000 Sq. feet

Head Count
5035 (BAU)

TNEB Demand
Phase I - 2,500kVA
Phase II - 1,500kVA
Total MD - 4000 KVA

SDBs
SDB1 (G+3)
SDB2 (G+6)
SDB3 (G+3)
Academy (G+1)
New & Old Cafeteria (G+2)

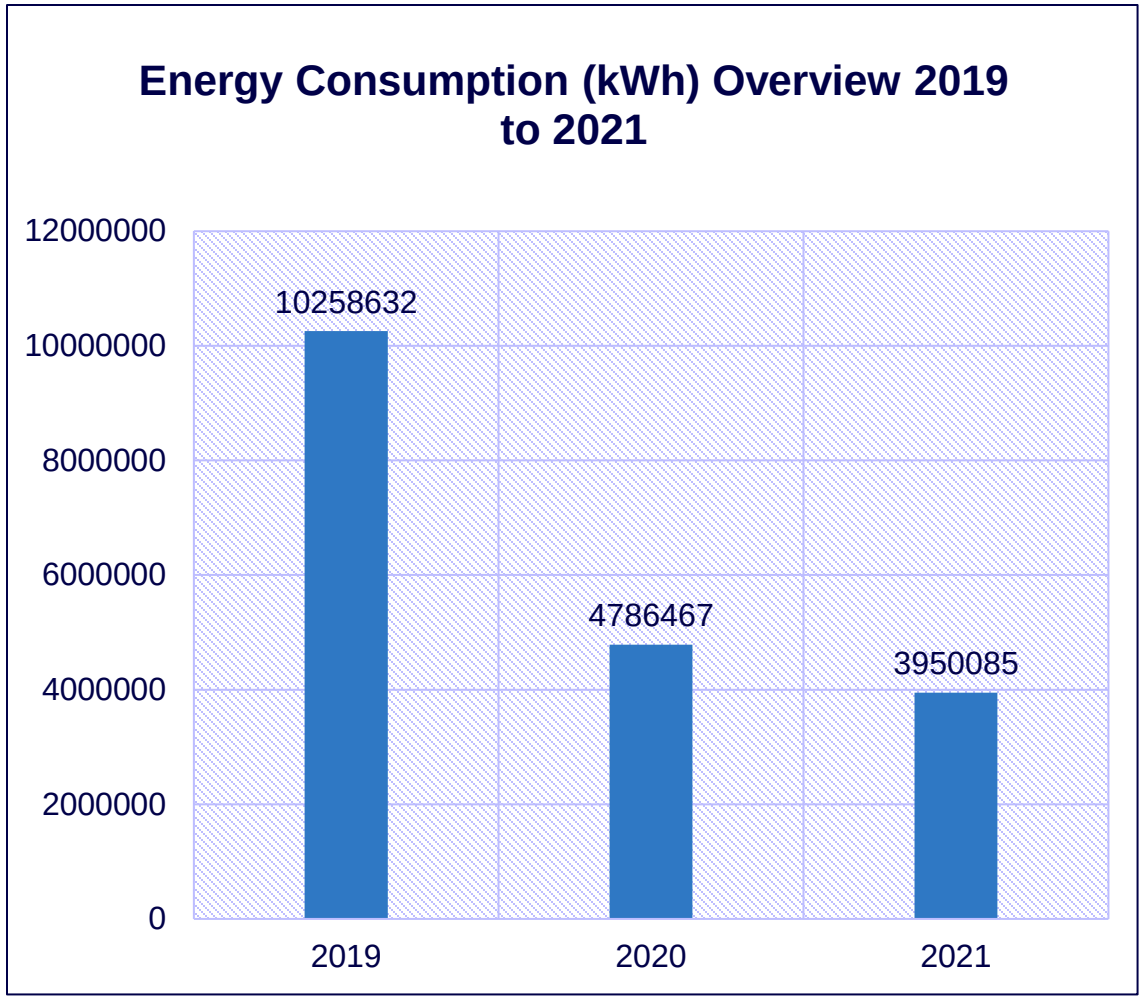
HVAC
Phase I - 1,460 TR
Phase II - 750 TR
Total – 2,210 TR

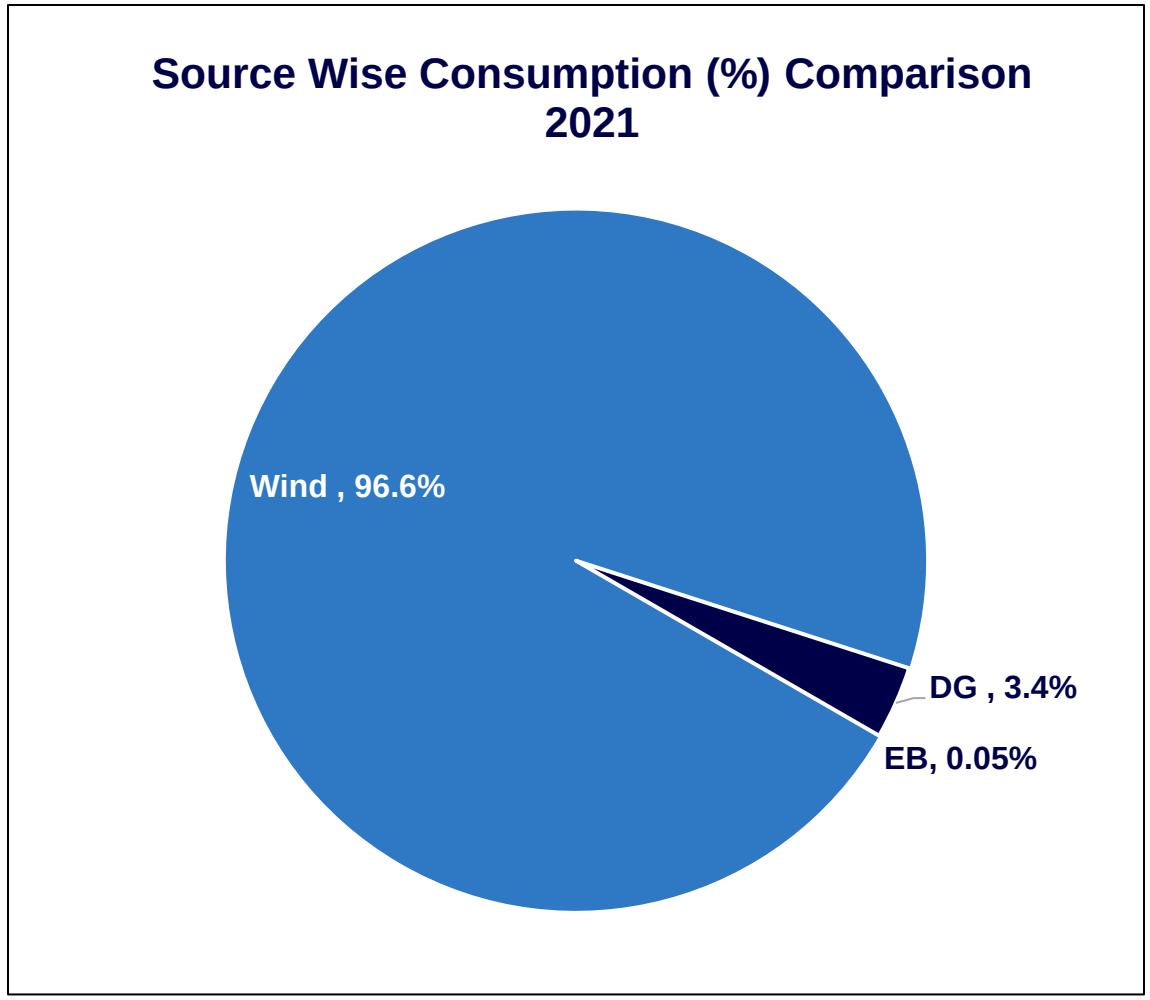
DG Capacity
Phase I 5500 kVA
Phase II 3030 kVA
Total - 8,530 KVA

UPS Capacity
Phase I - 650 KVA
Phase II – 250 KVA
Total – 900 KVA

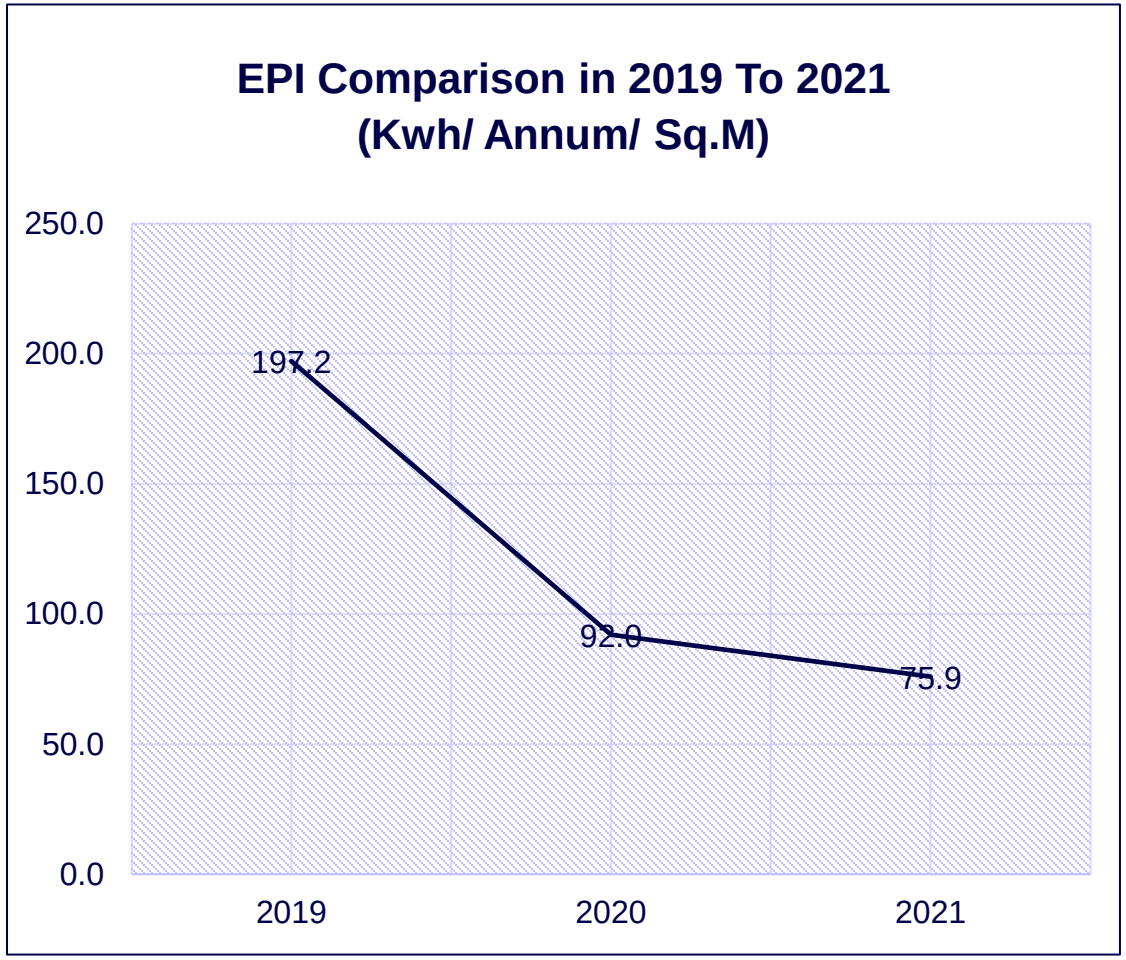
STP
Phase 1 - 150KLD
Phase 2 - 148KLD
Total – 298 KLD

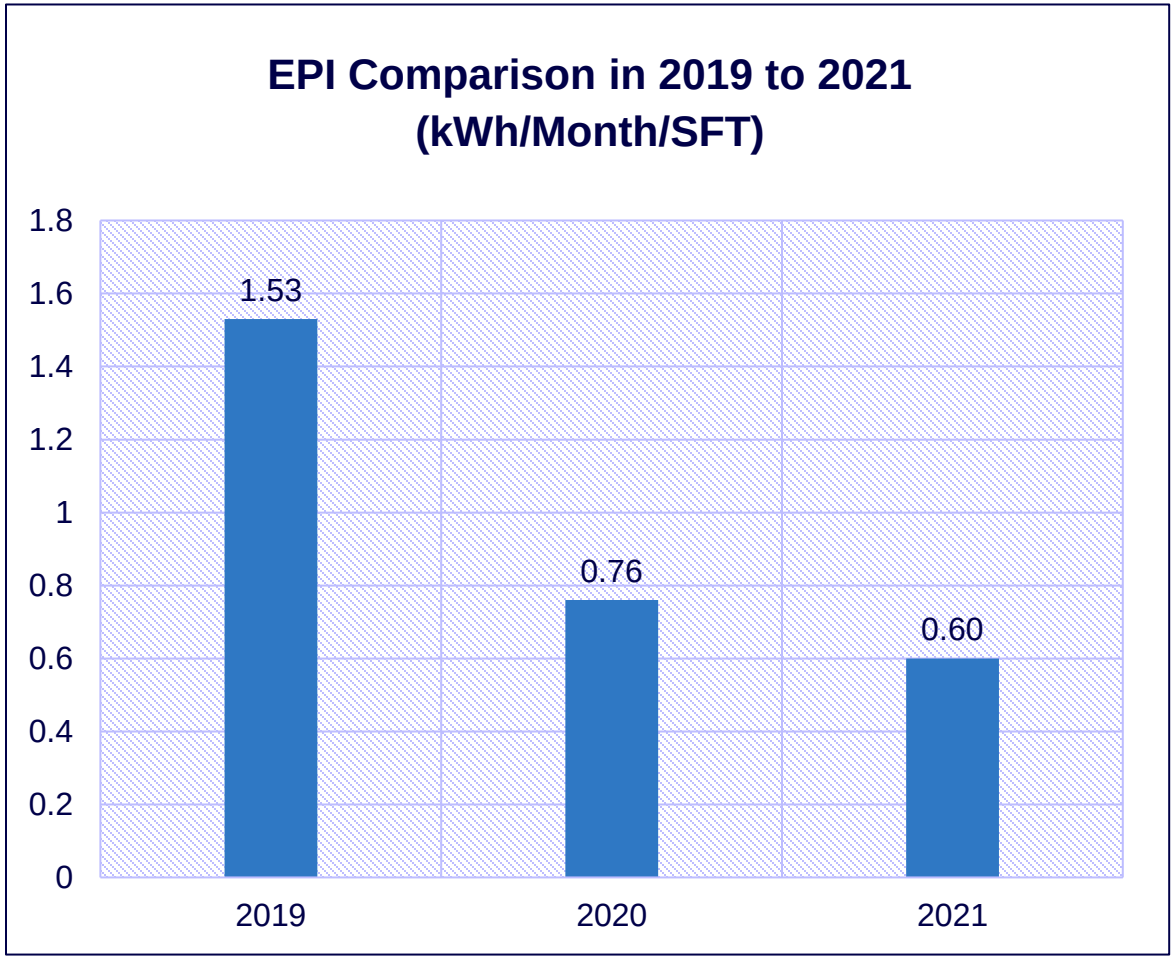
Energy Consumption Overview - 2019 to 2021



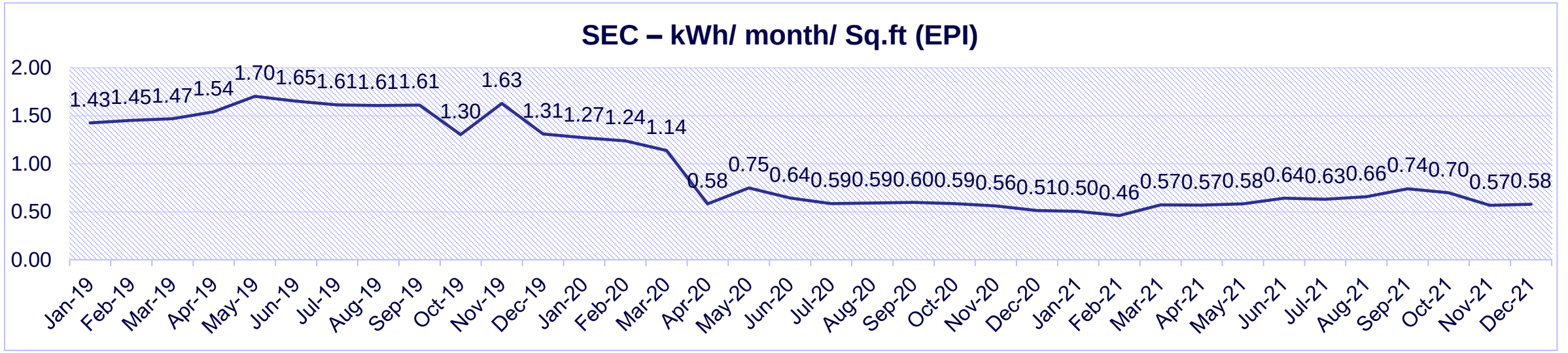


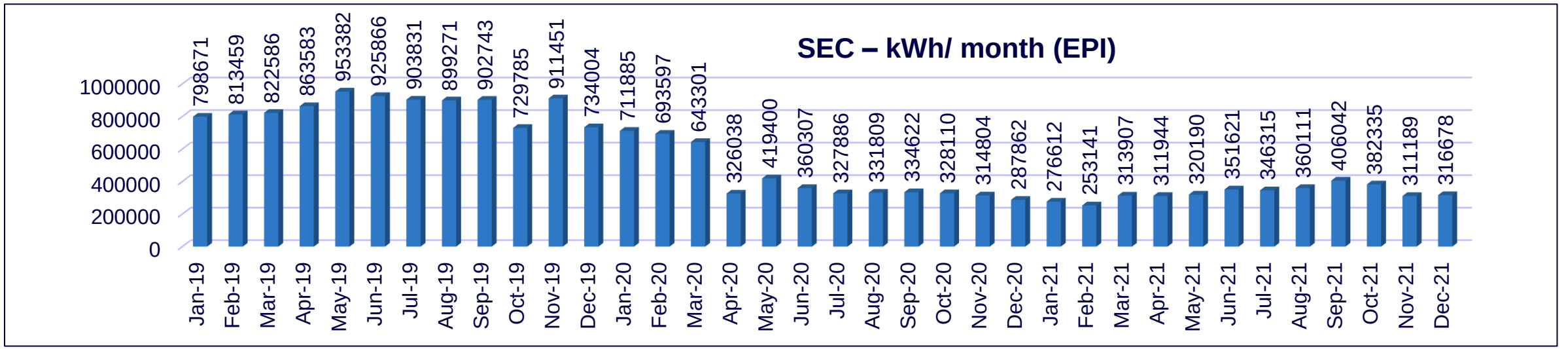
Specific Energy Consumption in Last 3 Years (2019-2021)



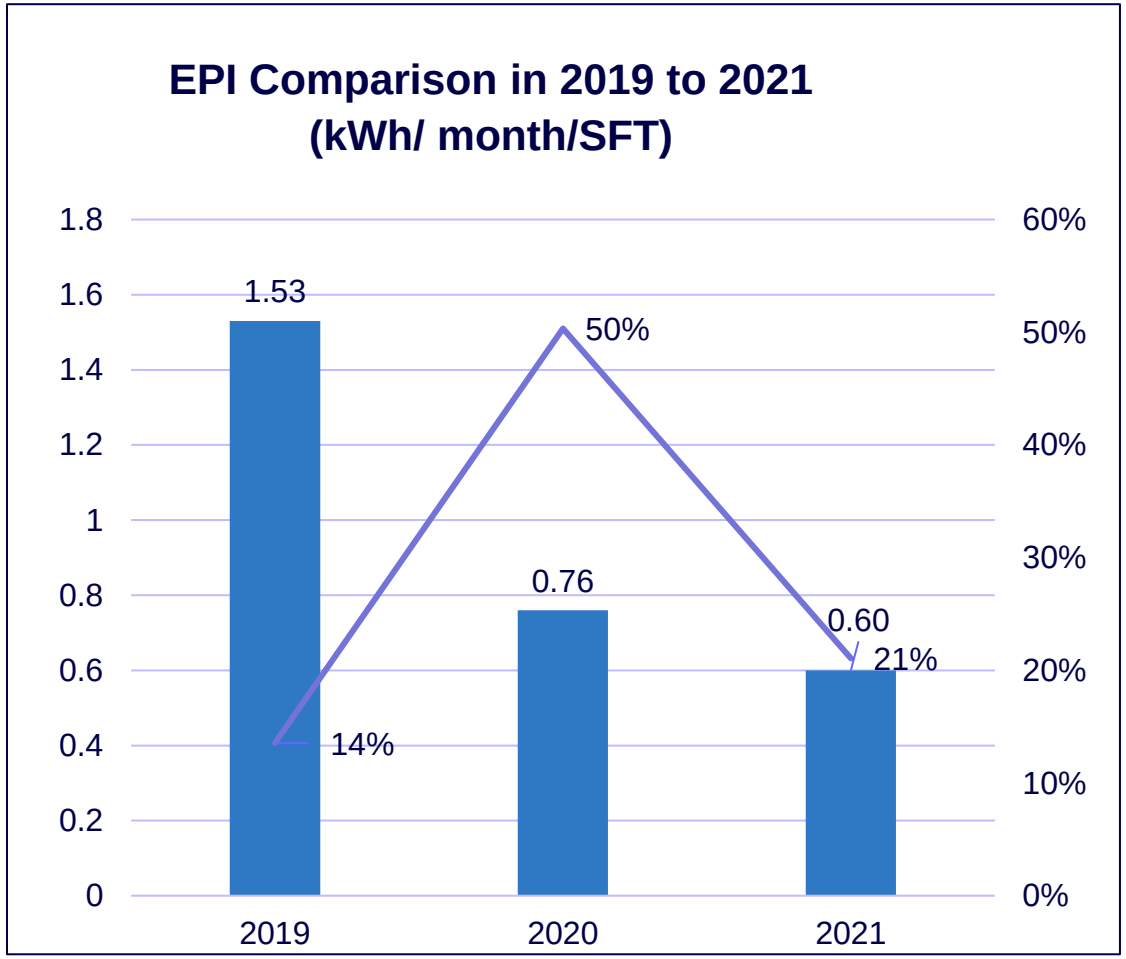


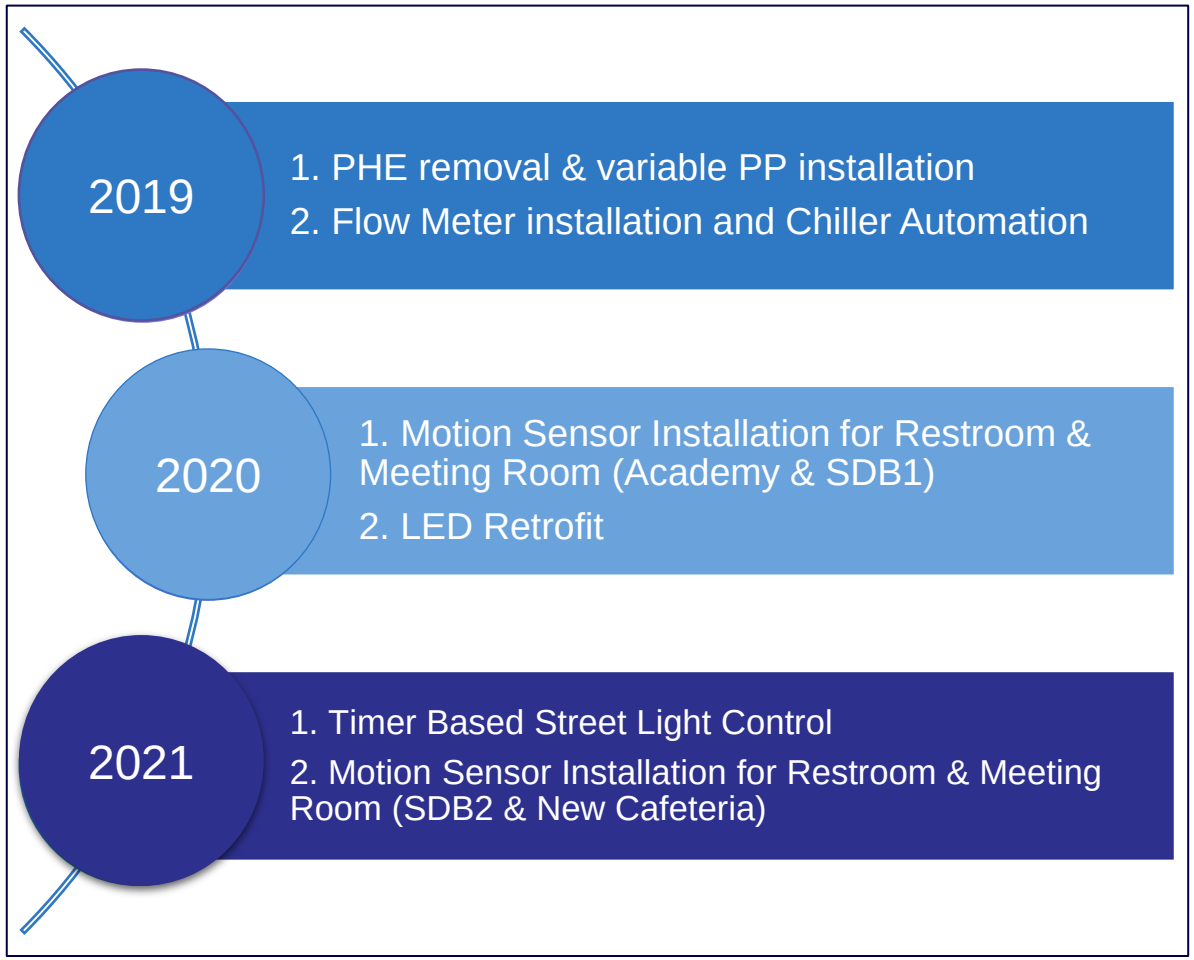
Specific Energy Consumption Overview - 2019 to 2021





Specific Energy Consumption Trend Analysis - 2019 to 2021



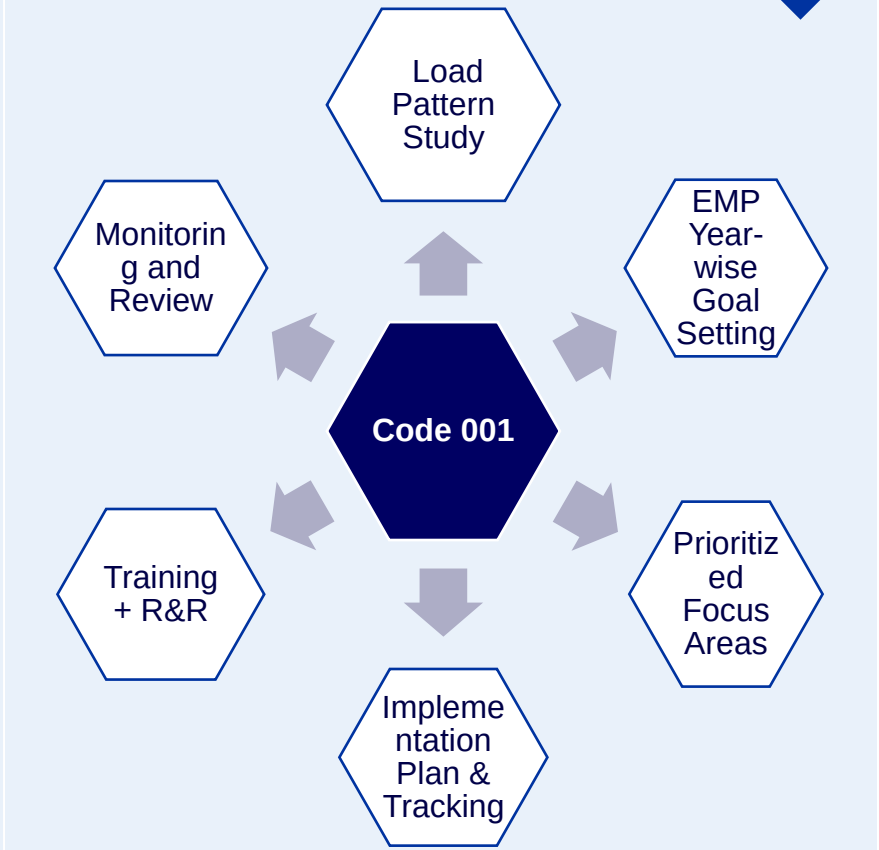


Comparison of SEC With Internal & National Benchmarks

BEE - National Benchmark EPI in kWh/Sq. M/Year			
Star Rating	**Warm and Humid**	**Composite**	**Hot and Dry**
1 Star	200-175	190-165	180-155
2 Star	175-150	165-140	155-130
3 Star	150-125	140-115	130-105
4 Star	125-100	115-90	105-80
5 Star	**Below 100**	**Below 90**	**Below 80**

Internal Benchmark	
Owned Campus	**EPI/sqm/ annum**
CHN - Siruseri	32.3
CHN - Siruseri - SEZ	42.3
CHN - CKC	42.9

Approach Methodology



List of Project Planned in 2022-23

SDB-3 Chiller Retrofit

Energy Savings - 8.27 L kWh
Cost Saving (₹) - 66.19 L
Investment (₹) - 285 L
ROI - 4.5 Years

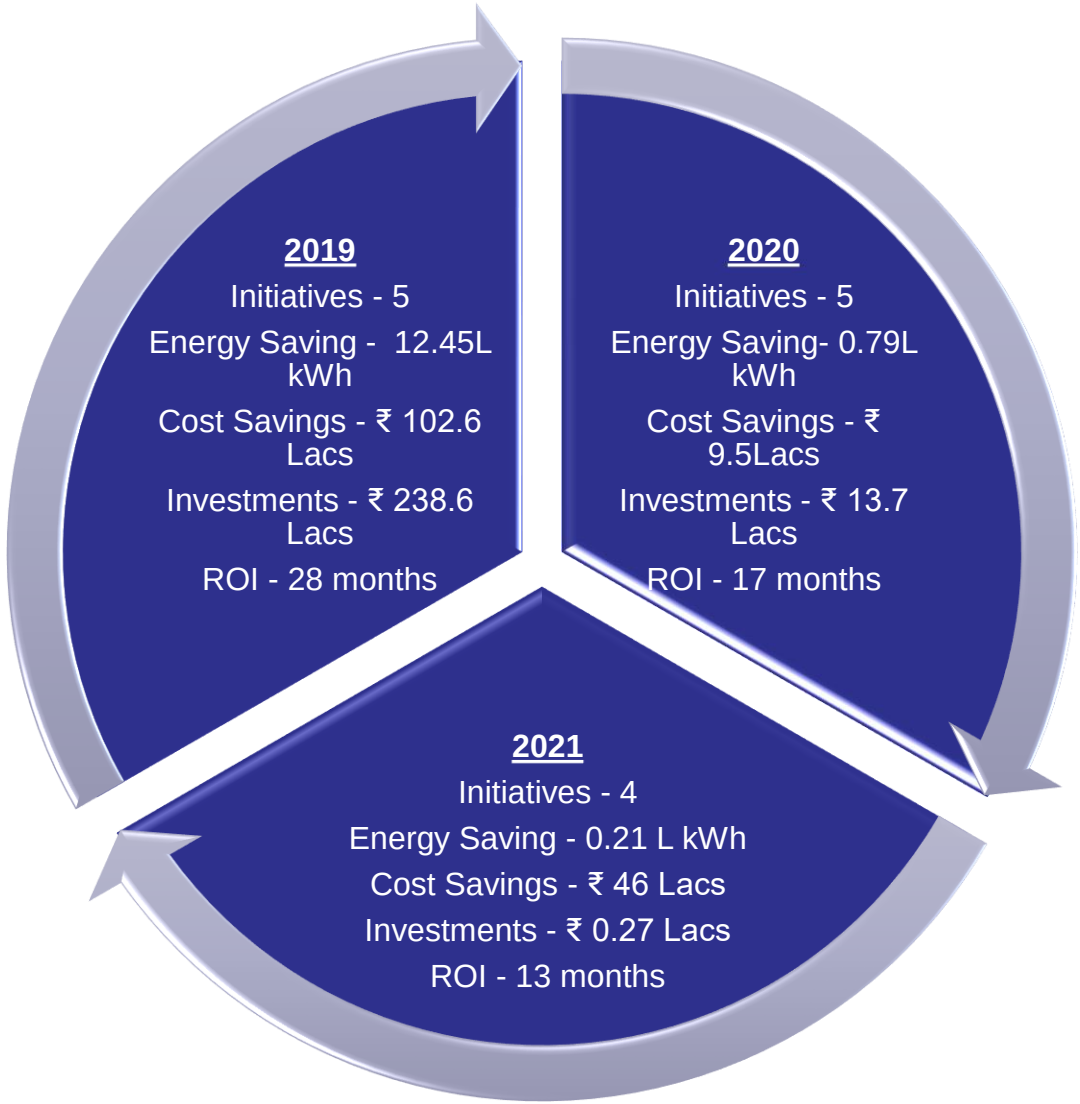
SDB-3 AHU EC Fan Replacement (conventional AHU motor- 11 KW, EC fan AHU - 3.3 KW)

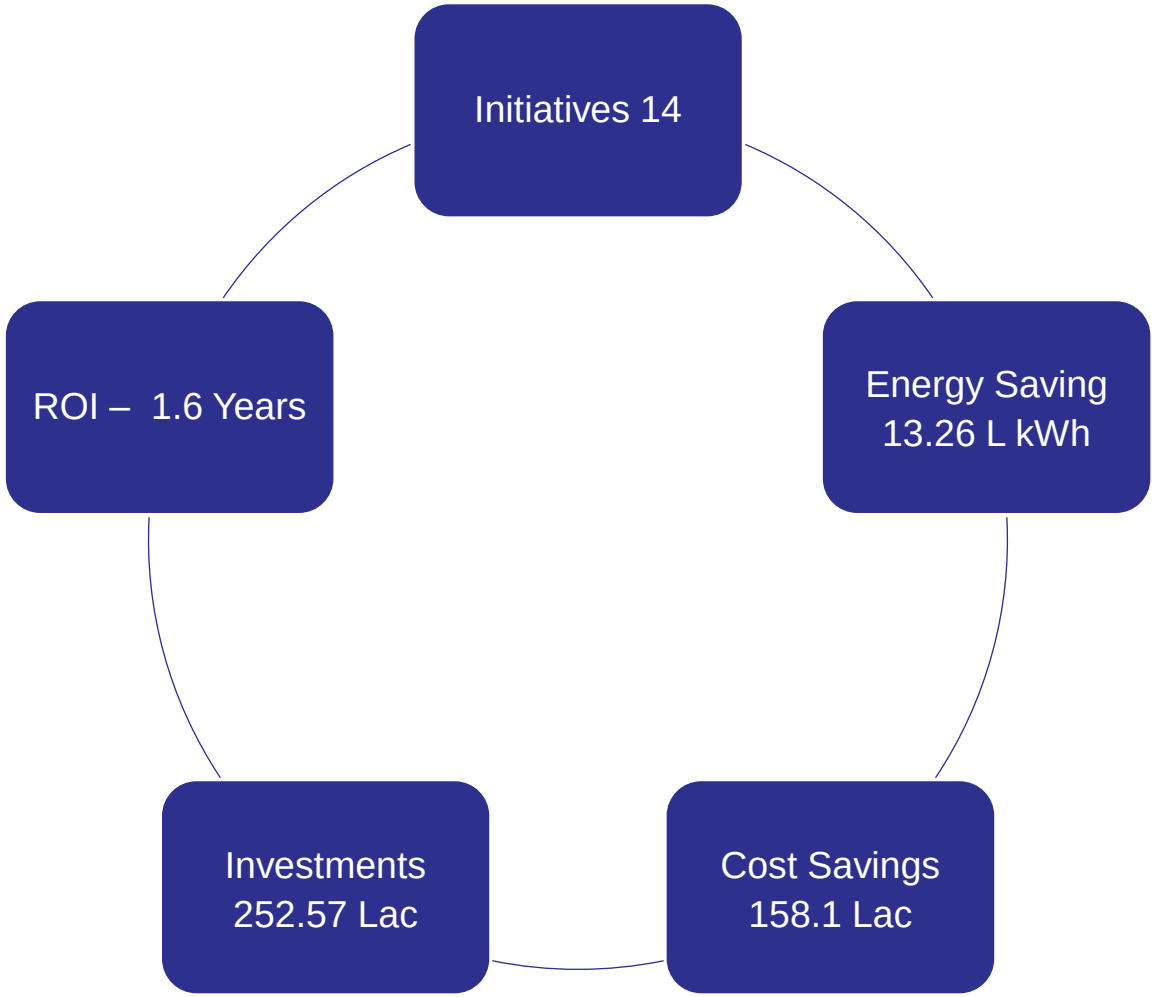
Energy Savings - 7.76 L kWh
Cost Saving (₹) - 62.09 L
Investment (₹) - 151 L
ROI - 2.5 Years

Chiller Header Line Integration between SDB-1 & SDB-2

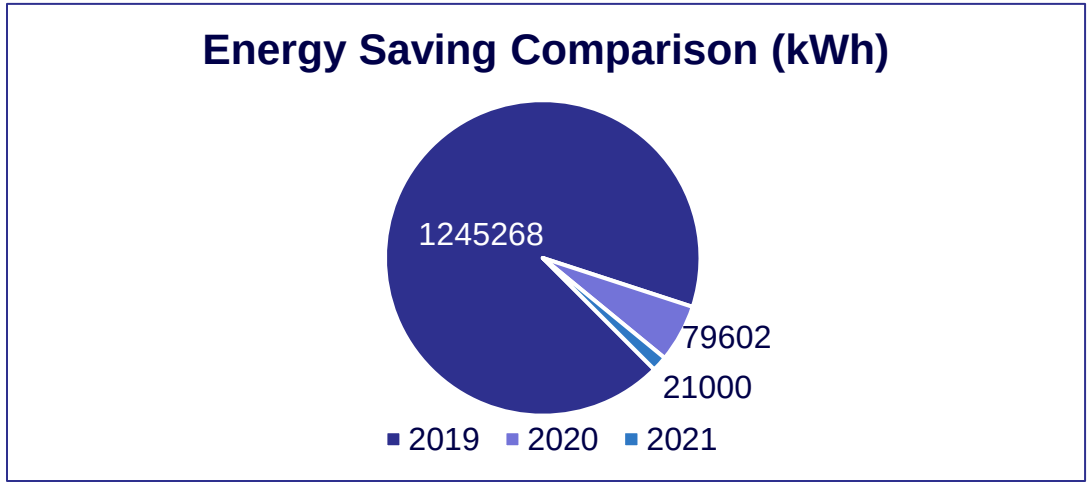
Energy Savings - 2.57 L kWh
Cost Saving (₹) - 20.57 L
Investment (₹) - 52 L
ROI - 2.5 Years

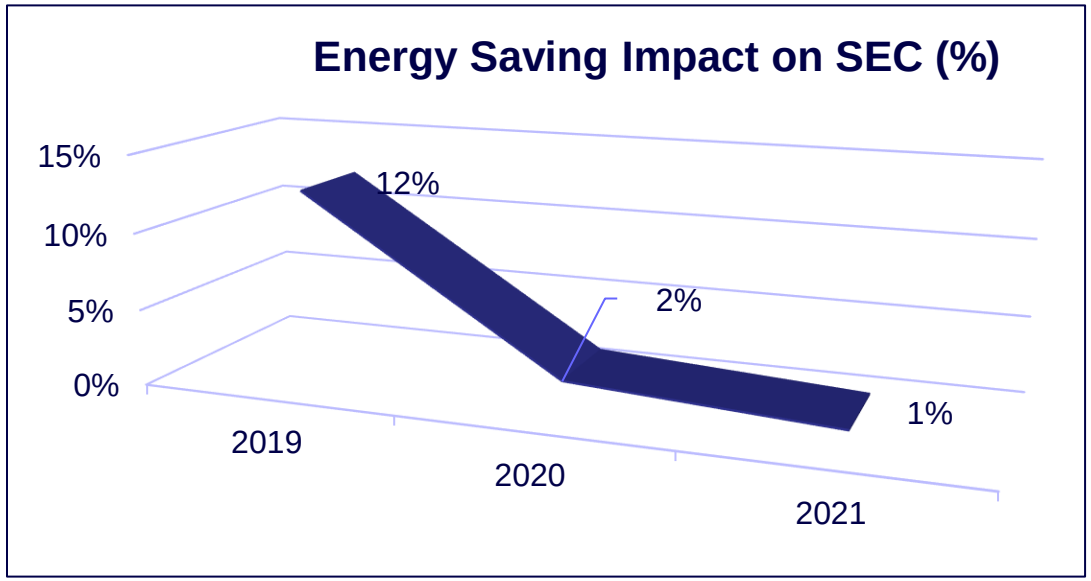
Energy Saving Projects Implemented Summary in 2019 to 2021





Energy Saving Projects Implemented Summary in 2019 to 2021





Year 2019

Major Initiatives

- PHE Removal & Variable PP installation
- BTU Meter Installation and Chiller Automation
- LED Retrofit Activity

Year 2020

Major Initiatives

- Desktop Unplugging Activity
- Motion Sensor Installation for Restroom & Meeting Room (Academy & SDB1)
- LED Retrofit

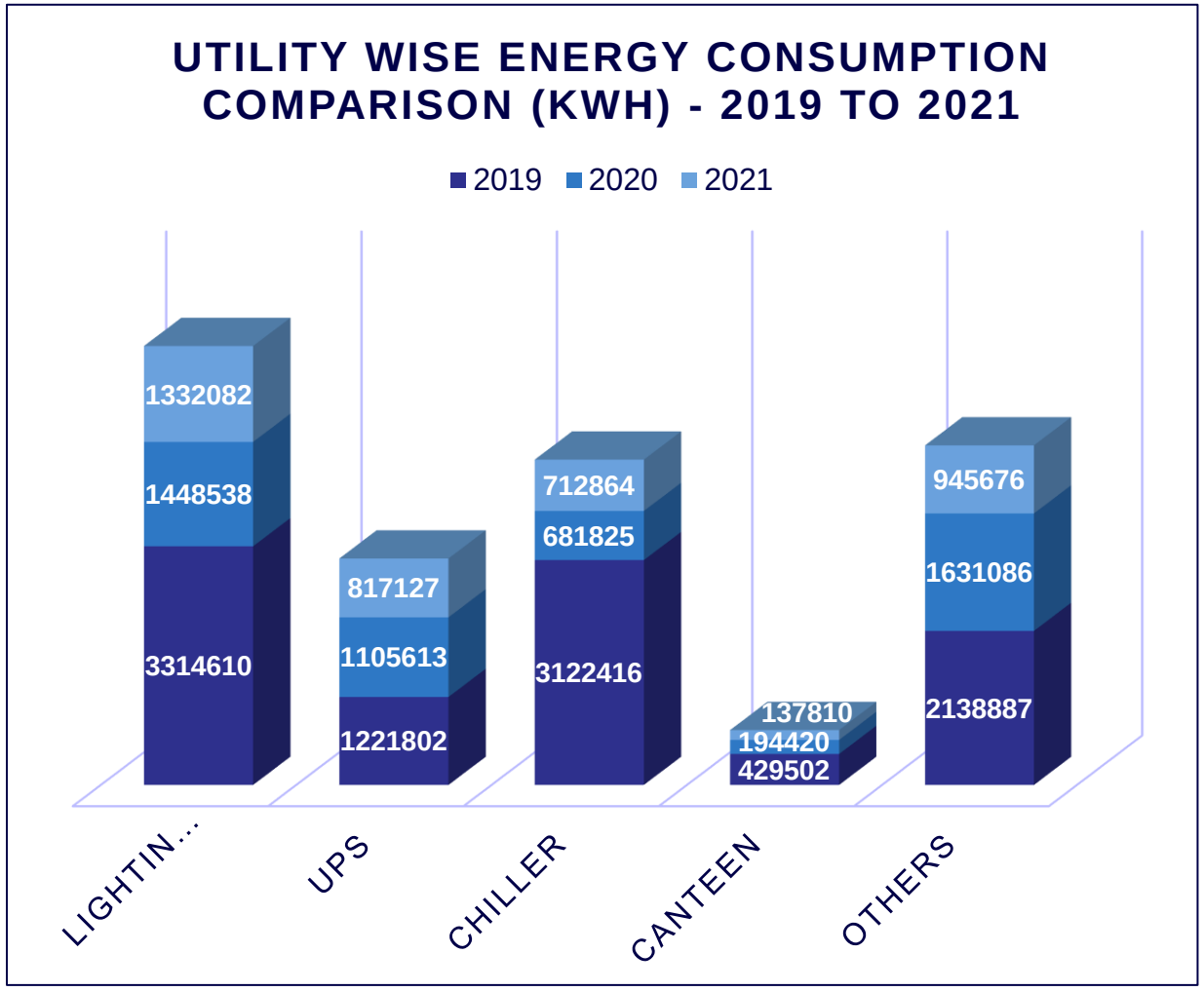
Year 2021

Major Initiatives

- Motion Sensor Installation for Restroom (SDB2 & New Cafeteria)
- Maximum Demand Reduction – 3500 KVA to 2500 KVA (1000 KVA Reduction)
- Auto Operation of Street Lights & Exhaust System

cognizant

Energy Saving Impact on Utility Wise Energy Consumption Reduction 2019-2021



Lighting + AHU
1982528 kWh
56%

UPS
404675 kWh
29%

Chiller
2409552 kWh
65%

Canteen
291692
70%

Others
1193211
43%

Innovative Project - Digitalization of chiller Plant Operations in SDB2

Challenges

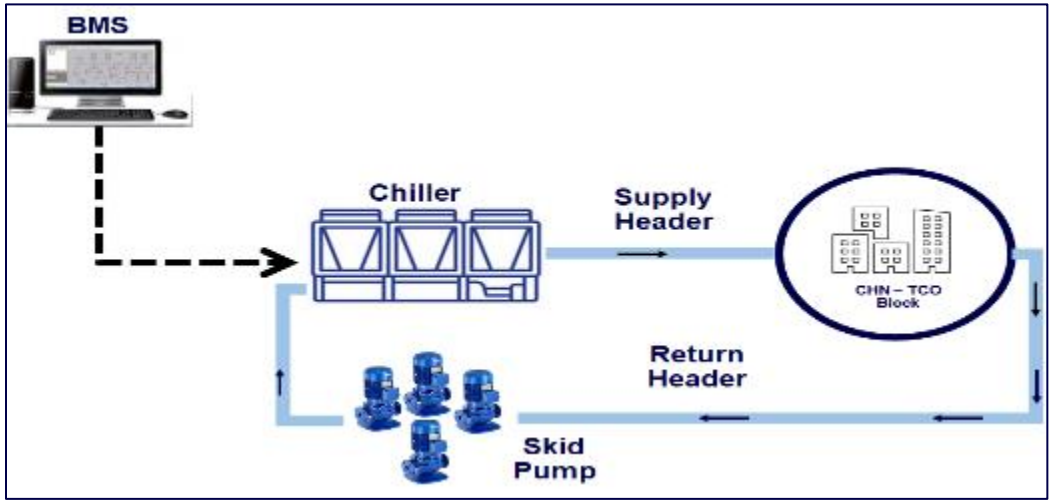
- Presently TCO facility don't have CPM (Chiller Plant Manager)
- Chiller switch on/off by manual mode
- Dedicated plant technician involvement is required for chiller operation
- Chiller need to be control manually depends upon the climatic changes

Implemented

- Installed water flow meters in common header & actuator for individual chillers
- All soft & hard points are connected through DDC Controller to BMS System
- Real Time Monitoring of KW/TR Chiller Plant
- Chiller operation started remotely.

Achievements

- Scheduled of Chiller Plant operations
- Effective Chiller operation and governance control
- The total energy consumption reduced 800 kWh/day



Annual Energy Savings - 2.31 Lakhs kWh

Annual Cost Saving - INR.18.5 Lakhs

Investment Cost - INR.5.75 Lakhs

Return On Investment - 4 Months

Innovative Project - Auto Operation of Exhaust Fan & Peripheral Lighting System

Manual Operation

- Exhaust Connected Load – 33 KW (10 hrs/day)
- Lighting Connected Load – 7.12 KW (12 hrs/day)

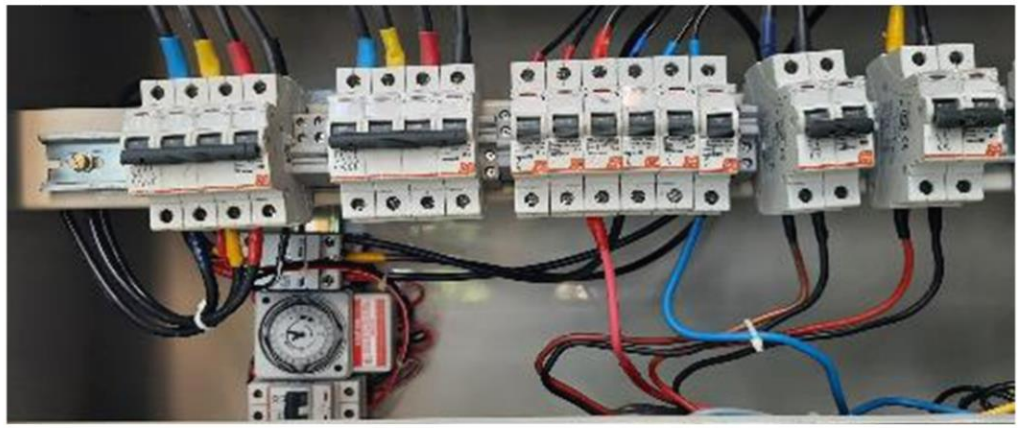
Auto peration

- Installation of Timer-15 Nos (EF - 5 & PL - 10)
- Optimization of Operating hrs - 1

Benefits

- Energy Consumption Reduction – 40.12 kWh/Day
- Elimination of Manual Intervention

Timer Installed in DB



Energy Saving details

Achieved Energy Saving per month in kWh – 1,072	Annual Energy Saving in kWh - 12,859	Annual Cost Saving in INR - 128,590	Total Investment Cost - 120,292	Payback Period (ROI) – < 1 Year

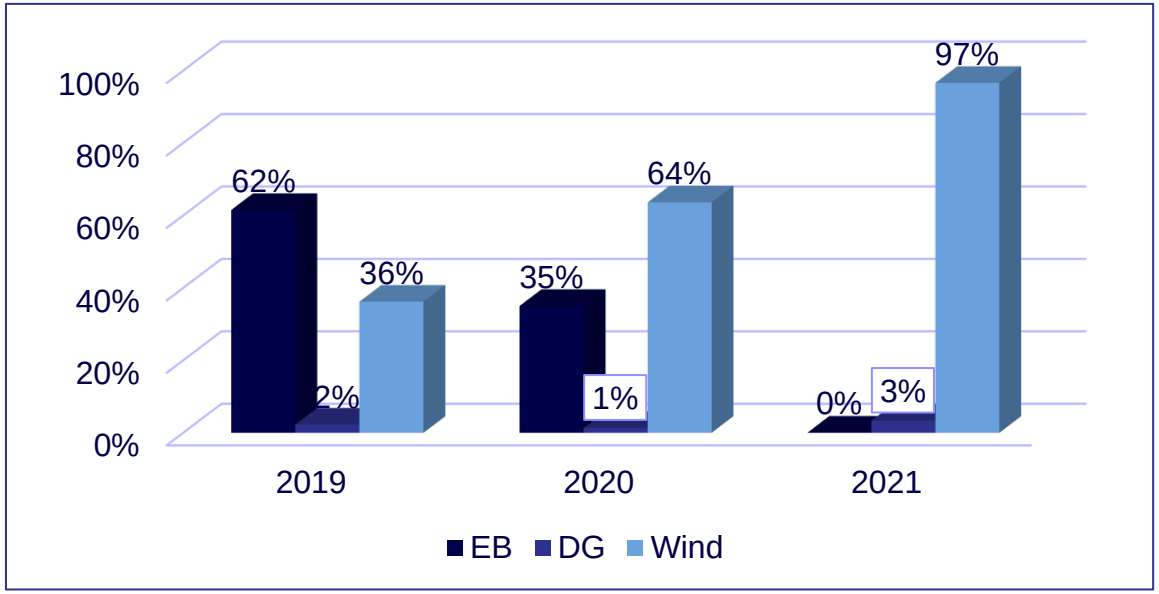
Innovative Project - Auto Operation of Rest Room Lighting (Motion Sensor)

Manual Operation	Auto Operation	Benefits
• Lighting connected load – 4.6 KW (16 Hrs/Day)	• Installation of motion sensor - 64 Nos • Optimization of operating hrs - 8	• Energy Consumption Reduction - 1,199 kwh/day • Elimination of Manual Intervention • Lighting Burning hrs reduced/ lift time increased

Energy Saving details

- Annual Energy Saving in kWh -14,385
- Annual Cost Saving in INR - 166,812
- Total Investment Cost – 210,720
- Payback Period (ROI) – 1.2 Years

Utilization of Renewable Energy Sources - 2019-2021



Total Direct GHG Emission Reduction

10626 MT of CO_2

Technology (Electrical)	Type of Energy	Onsite/Offsite	Installed Capacity (MW)	Wind Energy consumption (million kWh)	% of Overall Wind Energy
Electrical	Wind	Offsite	256.85	10.57	65%

Utilization of Renewable Energy Sources - 2019-2021

Year	Installed Capacity (MW)	Total Wind Energy Contracted Quantum (Lacs kWh)	Actual Supplied Wind Energy Quantum (Lacs kWh)	CHN -TCO Consumption (Lacs kWh)	Allocation Contribution (%)
2019-20	256.85	525	509	29.03	5.6%
2020-21	256.85	525	379	34.81	9.9%
2021-22	256.85	525	339	38.27	11.3 %

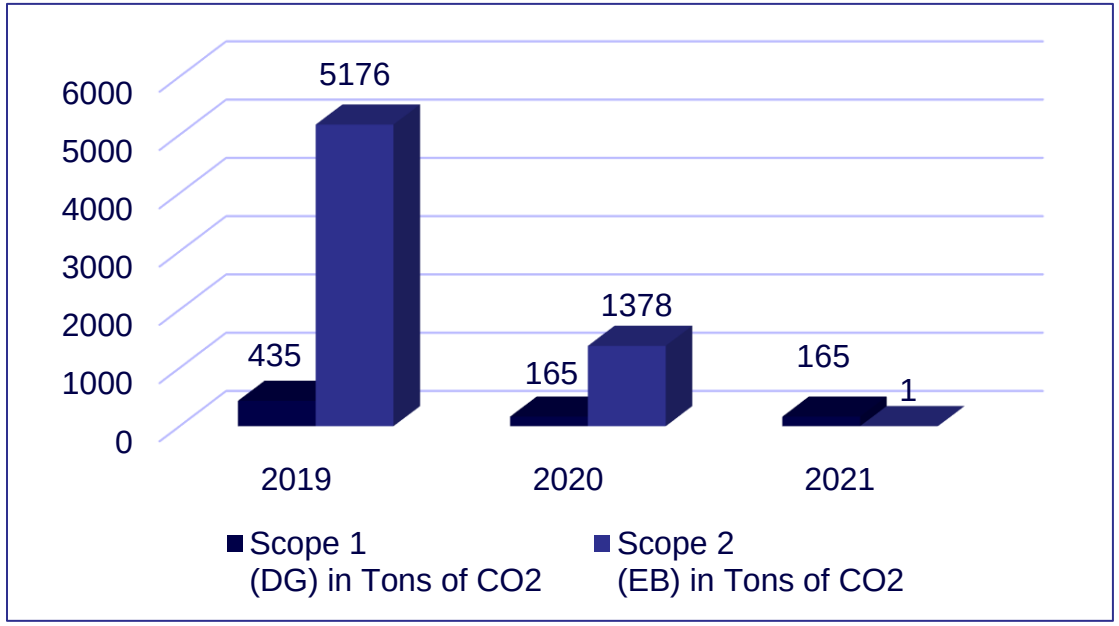
- In FY 2018-19 additional quantum of 200 lacs kWh purchased with an investment of INR.200 Lacs
- Actual Supplied wind Energy Quantum reduction for FY 2020-21 & 2021-22
    - Non-BAU Actual Energy consumption got reduced
    - Renewable energy utilization (Wind) 2019 - 36 % , 2020 - 64 % & 2021 - 97%

Year	Solar REC Requirement (%)	Non-Solar REC Requirement (%)	Solar REC Requirement Qty (No's)	Non-Solar REC Requirement Qty (No's)	Remarks
2019-20	5%	9%	145	261	REC purchase under progress
2020-21	8%	10%	301	386	
2021-22	11%	11%	402	402	

Waste Utilization and Management

Paper Waste – Recycle, Reduce & Reuse	Plastic Waste – Recycle & Reuse	Solid (garbage) Waste Recycle & Reuse	Hazardous / E-waste/ Battery Waste – Recycle & Reuse
• Limitation of printer access • E-Fit tool implemented and manual check list optimized • Paper cups usages eliminated 100%	• Plastic waste is segregated and stored separately • Plastic wastes are disposed only through authorized recyclers • Single use and throw away plastics are banned inside the campus	• All Solid wastes generated are disposed within SLA through authorized vendors.	• Battery waste – extension of battery warranty (3 to 3.5 years) • E –Waste – CFL to LED retrofit to enhance the lifetime and reduce the waste generation. Single use and throw away plastics are banned inside the campus

GHG Inventorisation - 2019 To 2021



GHG Reduction

GHG Reduction Target & Action Plan

- RE (Wind) utilization reduced from 52% to 36% in Year 2019
- Non R2O – Apr'20 to Dec'21 (Minimal occupancy)
- Energy efficiency project implementation
- Sourcing of 100% renewable energy by 2026

GHG Target

Indoor Air Quality (BAU)

Test Parameters	Units	Result	Permissible Limit	Remarks
Carbon Dioxide (CO2)	Mg/m3	839	1800	• Testing through NABL laboratory • Frequency of sampling is quarterly once for workstations
Total Fungal Count	Cfu/m3	3	500	
Total Bacterial Count	Cfu/m3	32	500	

cognizant

Standardization of Best Practices

Personnel Computer

- Sleep mode enabled for all personnel computer

- Conventional CPU replacement with compact CPU

- Awareness created to Associates to switch off the monitor while leaving the workplace

- PC to Laptop
- (95% Associates)

Air-Conditioning

Workplace temperature policy standardized
24 ° C to 26 ° C

Maintaining UPS/ battery room temperature b/n
25 ° C to 26 ° C

Hub room temperature-maintained b/n
24 ° C to 26 ° C

Kitchen / Pantry

Elimination of electrical hot plate

Mandatory use of BEE star rated equipment's

Scheduled operation of ventilation system

Periodical cleaning of heater in bain-marie

Standard operation temperature for all freezer equipment

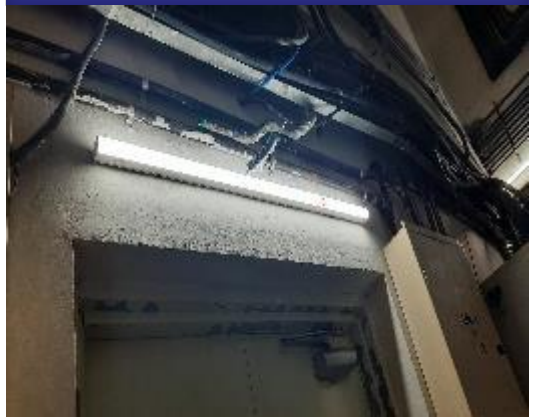
Weekly deep cleaning for all type of freezer

Standardization of Best Practices

Switching off Ideal Chiller

Light Pole Height Optimization

20W LED Tube Fixture

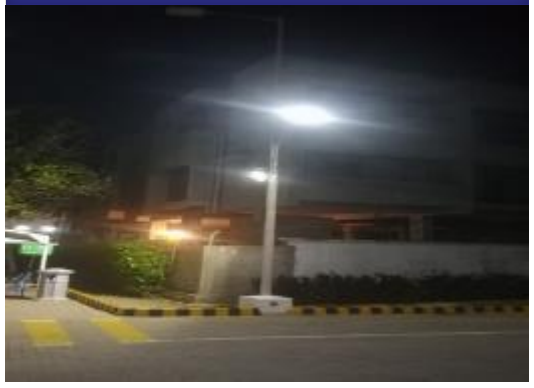


Solar Light Retrofit (250W - 30W)

Motion Control Sensor for washroom Lighting

Lighting Circuit Modification with Switch Color Code

Peripheral light retrofit (250W MHL to 100W LED)



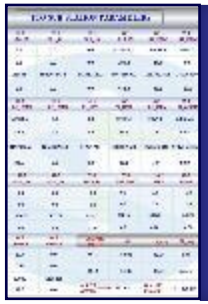
Desktop Unplugging Activity

Teamwork, Employee Involvement & Monitoring

UPS Energy Monitoring via BMS

Substation Parameter Monitoring

FMS Tool Consumption Monitoring



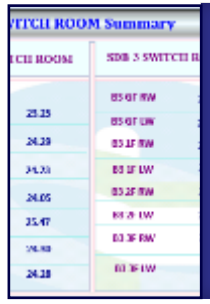
Substation Feeder Load Monitoring via BMS

Chiller Parameters Checking

DG Parameters Checking

UPS Parameters Checking

Chiller Monitoring @ BMS



Hub Room Temperature Monitoring

Major Achievements – MD Surrendered 3500 KVA to 2500 KVA

Idea Description

- Reduction of Maximum Demand -3500 KVA to 2500 KVA

Problem Statement

- Average Billing for Maximum Demand is higher than the actual usages
- Actual Billing cost for Maximum Demand is INR.13.23 Million per Annum

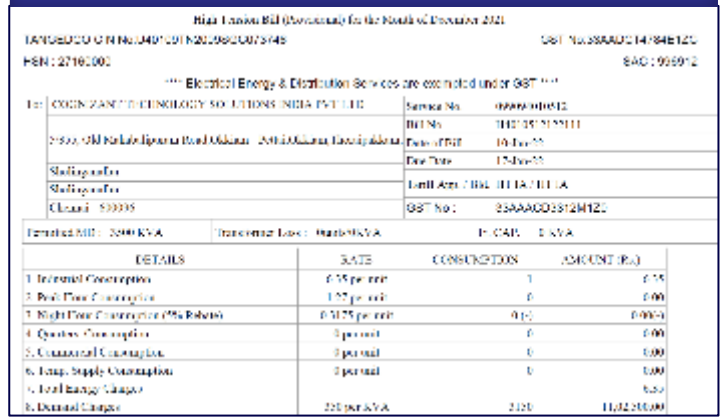
Solution Identified

- Peak demand usages analyzed, and recommended to surrender the excess demand 1000 KVA (3500 KVA to 2500 KVA)

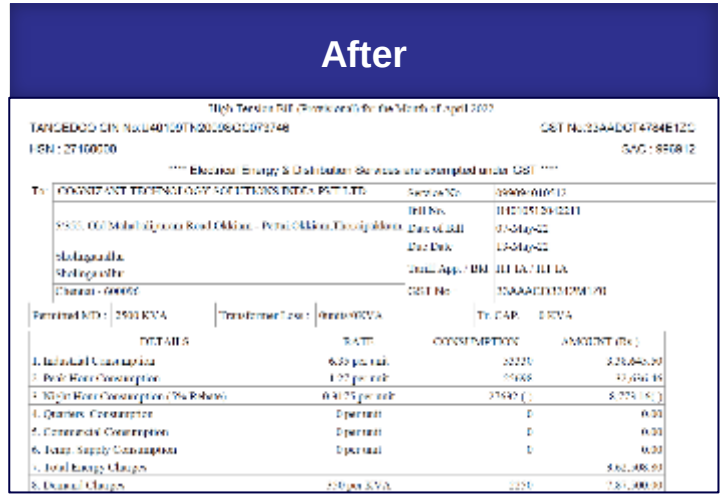
Process Adapted

- As per our recommendation, our team took up the case with TANGEDCO and surrendered the excess demand of 1000 KVA

Before

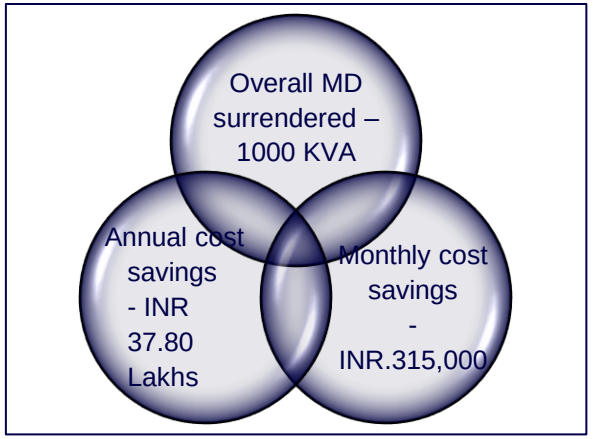


After



Logics/Analysis

- 1. Monthly billing demand and actual reached demand analyzed for 3 Years
- 2. Based on the analysis and brainstorming session with stakeholder, decision has been taken to surrender the demand



Energy Awards

CII Award - Excellent Energy Efficient Unit – Year 2020

CII Award - Excellent Energy Efficient Unit – Year 2021

CII-SR EHS Excellence Award Year 2020 - 2021

Way forward

Net Zero Absolute Emission Reduction of 50%-2030

Net Zero Energy 2026

Energy Efficient Chiller Retrofit at SDB-3 - 2023

Conventional Blowers with EC Fans @ AHU - 2023

HVAC Header Pipeline Integration – SDBs 2023

23rd National Award for Excellence in Energy Management 2022

MBP F2 & F3 - Bengaluru

August 2022